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Interim Measures Work Plan

USEPA RCRA 3008(h) Administrative Order
Docket No. RCRA-04-2014 (b)
EPA I.D. No. MSD 008 182 081

Hercules Facility
Hattiesburg, Mississippi

22 August 2014

ARCADIS

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Interim Measures Work Plan

Hercules Facility
Hattiesburg, Mississippi

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I have reviewed this document in sufficient depth to accept full responsibility for its contents related to the geologic information contained herein

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1. Introduction

This Interim Measures Work Plan (IMWP) is being submitted as required by Item 21.b. of the Resource Conservation and Recovery Act (RCRA) Section 3008(h) Administrative Order on Consent (3008(h) Order), Docket No. RCRA-04-2014-4201(b) (3008(h) Order; July 8, 2014). The focus of the 3008(h) Order is to complete interim measures related to the Impoundment Basin (IB), Area #1, and Area #2 associated with the Hercules Incorporated (Hercules) facility located in Hattiesburg, Mississippi.

This IMWP is generally consistent with the Revised IB Decommissioning Work Plan dated August 5, 2013, and has been revised in response to Mississippi Department of Environmental Quality (MDEQ) comments dated May 8, 2014. Additionally, assessment and evaluation activities associated with Area #1 and Area #2, which were outlined in letters submitted to the U.S. Environmental Protection Agency (USEPA) and MDEQ on June 24, 2014, and which have generally been completed, are also included in this IMWP.

1.1 Report Structure

The purpose of this IMWP is to address the preparatory activities, design, construction, implementation, operation, maintenance, and performance monitoring of the interim measures for IB decommissioning and the Area #1 and Area #2 activities. As required in Attachment 2 to the 3008(h) Order, the IMWP includes the following sections:

- Interim Measures Objectives;
- Investigation and Preparation Activities;
- Conceptual Design Plans and Specifications (IB);
- Construction/Implementation Actions (IB);
- Interim Measures Construction Quality Assurance;
- Operation, Maintenance, and Effectiveness Monitoring;
- Reporting;
- Community Engagement;
- Cost Estimate/Financial Assurance; and
- References.

The IMWP provides general descriptions of the method or methods to be used to decommission the IB including performance standards or provisions to address odor/vapor control, cross media transfer, water infiltration management, and IB wall stability. This IMWP also includes a sampling strategy (described in the Investigation and Preparation Activities section) to characterize the sludge within the IB prior to removal in order to expedite management and disposal activities. This characterization was requested by the USEPA and MDEQ due to the potential for sludge in the IB to have been affected by previous decommissioning activities conducted between November 2012 and January 2013.

Additionally, this IMWP outlines the activities that have been and will be conducted to evaluate the dissolved-phase groundwater plumes in Area #1 and Area #2, evaluate the potential underground storage tanks (USTs) and scale structure in Area #2, evaluate the vapor intrusion pathway in Area #1, and remove the mobile fraction of dense non-aqueous phase liquid (DNAPL), to the extent technically practicable, in Area #1.

1.2 Overview of the Interim Measures

1.2.1 Impoundment Basin

The IB is generally rectangular in shape and measures approximately 70 feet by 250 feet. The IB was constructed in the 1940s with an earthen bottom and was modified in the mid-1970s (approximately 1976) with the installation of timber sheet pile retaining walls with a concrete cap placed around the perimeter of the IB. The influent and effluent baffle systems were connected to the sheet pile walls at that time. The total depth is approximately 10 feet below ground surface. There were approximately 8 feet of sludge present in the IB during the sludge characterization sampling in 2010 (ARCADIS 2010a), which represented approximately 4,700 cubic yards of sludge that required removal. During the initial decommissioning activities in 2012 using the belt-filter press, approximately 280 cubic yards of sludge was removed via pumping and dewatered and disposed of at permitted off-site facilities.

Data associated with IB operations between 1996 and 2001 and data collected by Eco-Systems, Inc., in 2008 and 2009 were previously evaluated for the project. In addition, characterization data were obtained and evaluated during implementation of the Sludge Characterization and Bench Scale Treatability Work Plan (ARCADIS 2010b).

The sludge in the IB is too wet to directly dispose at a landfill; therefore, removal or solidification of the free liquids in the sludge is required. In 2012 and early 2013, mechanical dewatering of the sludge was implemented using a belt filter press and proved to be ineffective. The filter press was accumulating a sticky/gummy material on the belt and rollers, preventing effective operation.

Therefore, solidification of the sludge prior to off-site disposal is likely the most appropriate and effective approach to drying the sludge and decommissioning the IB. Bench scale testing has been conducted to determine a reagent capable of solidifying the IB sludge. A reagent such as quick lime, Portland cement, or fly ash will be added to the sludge in a sufficient quantity to solidify the sludge enough to pass the Paint Filter Liquids Test (PFLT). This will make the material suitable for conventional transportation over public roads and disposal at a permitted landfill. This was proposed in the ARCADIS IB Decommissioning Work Plan (August 2013) submitted to MDEQ. MDEQ responded on May 8, 2014, and Hercules has asked for clarification. This IMWP has been developed using information from the original IB Decommissioning Work Plan, previously conducted field activities, and comments provided by the USEPA and MDEQ.

In addition to the sludge within the IB, sludge outside the IB walls in the southeastern corner of the IB and approximately 6 inches of native material from beneath the sludge will be removed and disposed of as part of this project. On September 20, 2012, six direct-push boreholes were advanced just outside the IB's timber sidewalls to look for indications of IB constituents and/or sludge (Figure 1) (ARCADIS 2012a). The samples were analyzed with a field screening instrument and visually inspected for the presence of sludge. Of the six boreholes advanced, one borehole in the southeastern corner of the IB contained sludge behind the IB sidewalls.

The specific techniques to be used for sludge management (e.g., to solidify the sludge) will vary to address field conditions and to promote timely implementation of the interim measures. Although Hercules is confident that sludge dewatering is achievable, there are several steps necessary prior to designing or constructing the interim measures. The actual techniques that the contractor will use in the field will be described in greater detail in the Interim Measures Design Report (required by Attachment 2, page A-4 of the 3008(h) Order) and may include agent addition and employ the use of heavy equipment such as dozers, backhoes, mixer heads, pugmills, or other approved equipment.

Detailed descriptions of the phases of the project are provided in the following sections as required by the 3008(h) Order.

1.2.2 Area #1

Several investigative efforts have been completed in Area #1 under the USEPA 3013(a) Administrative Order (AO) for the site. Based on the results of these investigations, the comments provided in the USEPA email dated April 17, 2014, and subsequent discussions with USEPA and MDEQ, the following activities were proposed for this area in correspondence dated June 24, 2014:

- Install a permanent monitoring well network;
- Conduct routine groundwater sampling of the well network;
- Conduct routine ambient air and crawl space monitoring;
- Evaluate DNAPL recoverability;
- Install a permanent DNAPL recovery well, if necessary;
- Evaluate alternatives for the dissolved-phase plume; and
- Address the off-site dissolved-phase plume to ensure there are no complete exposure pathways.

During July 2014, a permanent monitoring well network was installed in Area #1. A total of 17 monitoring wells and one stainless steel recovery well were installed at locations proposed by the USEPA and MDEQ (Figure 2). After installation of the well network, groundwater samples were collected from the monitoring wells. Additionally, a groundwater sample was collected from Monitoring Well MW-129-D. Ambient air and crawl space air samples were also collected from the residence at 135 West 8th Street.

The analytical data from the July 2014 Area #1 investigation effort will be discussed in the Revised Phase I and II Investigation Report, which is currently being prepared.

1.2.3 Area #2

Several investigative efforts have been completed in Area #2 under the USEPA AO. Based on these results, the comments provided in the USEPA email dated April 17, 2014, and subsequent discussions with the USEPA and MDEQ, the following activities were proposed for this area in correspondence dated June 24, 2014:

- Complete the delineation of the dissolved-phase groundwater plume;
- Remove the USTs;
- Evaluate the scale as a possible source of impacts to the area. If the scale is determined to be a source, it will be removed;
- Install a permanent monitoring well network after completion of the additional assessment and evaluation of the data; and
- Evaluate alternatives for the dissolved-phase plumes.

During July 2014, temporary wells were installed in Area #2 at locations recommended by the USEPA and MDEQ (Figure 3). Additionally, efforts were made to remove the suspected USTs. After extensive excavation in the area of the suspected USTs, no USTs were located. There were some small-diameter pipes encountered in the subsurface. Soils removed during the exploratory effort were containerized and characterized for subsequent disposal. An excavation was conducted around the scale. The excavation exposed a large concrete vault structure that had contained the scale equipment. No scale equipment was present. Based on these observations, it was determined that the scale was not a source; therefore, the concrete vault was not removed.

The analytical data from the July 2014 Area #2 investigation effort will be discussed in the Revised Phase I and II Investigation Report, which is currently being prepared. Within that report, a permanent monitoring well network will be proposed.

1.3 Phased Approach

As provided in the 3008(h) Order, the interim measures will be implemented using a phased approach for effective and timely execution. The phased approaches for the IB decommissioning and the Area #1 and Area #2 assessment and evaluation are provided below.

1.3.1 Impoundment Basin

The first phase includes the investigation and preparation tasks necessary to promote a safe and effective Interim Measures Design. It is anticipated that a steel sheet pile system will be needed to provide lateral support to excavations which will aid in water management and waste handling. Site-specific geotechnical data for the design of the sheet pile system will be necessary Once the sheet pile is designed, the sheeting will be installed and characterization sampling of the IB will be completed prior to the

second and third phases. The plan for obtaining these data is provided in the Investigation and Preparation Activities section of this IMWP.

The second phase includes developing the elements of the Interim Measures Design and preparation of the Interim Measures Design Report. The Interim Measures Design will be prepared following USEPA's approval of the IMWP as required by the 3008(h) Order. The Interim Measures Design Report will describe the approach to be used by the Contractor, which will be selected following the submission of the IMWP. The IMWP provides for the optimization of the general approach through the contractor bidding and selection process. A Quality Assurance Construction Plan will be prepared based on its specific (and potentially proprietary) approach.

The third phase entails the implementation of the Interim Measures Design elements. It includes the construction of the interim measures, and environmental monitoring and reporting.

1.3.2 Area #1

The phased approach for Area #1 includes the installation of the permanent groundwater monitoring well network, installation of a DNAPL recovery well, collection of routine groundwater samples, and collection of ambient air and crawl space samples. After data are collected, an evaluation will be conducted to determine the level of hydraulic control, mitigation, and/or removal required to mitigate unacceptable risks to residential areas.

The monitoring wells and recovery well were installed in July 2014 and the first round of groundwater and air samples has been collected. The evaluation of these data is currently being conducted.

1.3.3 Area #2

The phased approach for Area #2 includes the delineation of the dissolved-phase groundwater plume, removal of the USTs, investigation of the scale, and installation of the permanent groundwater monitoring well network. After data are collected, an evaluation will be conducted to determine the level of hydraulic control, mitigation, and/or removal required to mitigate unacceptable risks to residential areas.

Temporary wells were installed for delineation of the groundwater plume in July 2014. Additionally, the scale was evaluated and no USTs were identified in Area #2. The

groundwater data are currently being evaluated to determine if delineation has been completed. Upon review of the data, a permanent groundwater network will be proposed.

2. Interim Measures Objectives

The following are the three primary objectives for the decommissioning of the IB:

- Manage and dispose of the sludge in the IB in accordance with RCRA.
- Be protective of human health and the environment.
- Comply with applicable rules and regulations.

The following are the three primary objectives of the Area #1 activities:

- Evaluate the dissolved-phase groundwater plume to determine if interim measures are needed to mitigate unacceptable risk to receptors.
- Evaluate the vapor intrusion pathway at 135 West 8th Street to determine if interim measures are needed to mitigate unacceptable risk to residential receptors.
- Removal of DNAPL to the extent technically practicable.

The following are the two primary objectives of the Area #2 activities:

- Removal of the USTs and evaluation of the scale.
- Evaluate the dissolved-phase groundwater plume to determine if interim measures are needed to mitigate unacceptable risk to receptors.

3. Investigation and Preparation Activities

3.1 Impoundment Basin

As part of the first phase of the interim measures, a geotechnical evaluation of the area around and possibly beneath the IB will be performed to aid in the design of the sheet pile system. The study will include cone penetrometer testing (CPT) as well as some select standard penetration tests within borings to correlate CPT values in various locations and other geotechnical tests to determine the optimal sheeting design. The results of the study and a Sheet Pile Design Memorandum will be provided to the USEPA upon completion.

With USEPA acceptance of the Sheet Pile Design Memorandum, the perimeter of the IB will be enclosed (providing structural stability and limiting groundwater infiltration) and the IB will be separated into eight zones or cells with sealed sheet pile walls. Each cell will contain approximately 700 to 800 cubic yards of sludge, in-place, with the exception of one cell containing only approximately 350 cubic yards of sludge. At each cell, eight grab samples (four lower, four upper) will be collected and composited for laboratory analysis. This will result in the collection of 1 grab sample per 100 cubic yards or less. The upper sample will be collected from the midpoint of the upper two-thirds of the sludge column while the lower sample will be collected from the midpoint of lower one-third of the sludge column. For instance, with a 9-foot sludge column, the upper and lower samples will be collected from 3 and 7.5 feet below top of sludge, respectively, or with a 6-foot sludge column, the upper and lower samples will be collected from 2 and 5 feet below top of sludge, respectively. The composited samples from each cell will be analyzed for volatile organic compounds (VOCs) using the toxicity characteristic leaching procedure (TCLP) to determine whether the aggregate waste stream to be managed from each cell is hazardous or nonhazardous. Additional sample volume will be collected to allow for the analysis of additional parameters in accordance with the Land Disposal Restrictions (LDRs) considering constraints related to laboratory holding times. Any sample exceeding the TCLP limits will be analyzed for these additional parameters.

The following presents the sequence of work for implementing the decommissioning of the IB that will be performed as part of the investigation and preparation phase of work.

- Update the site-wide health and safety plan (HASP) as needed to cover preliminary work and project oversight.
- Complete a preliminary engineering evaluation to include but not be limited to a geotechnical study to properly design the construction of the sheet pile for the IB (i.e., Sheet Pile Design Memorandum).
- Prepare a contractor health and safety plan (CHASP).
- Complete preparatory activities including odor/vapor controls and erosion control measures (to comply with Hercules' site Storm Water Pollution Prevention Plan) that will be employed during the sheet pile installation.
- Install sealed steel sheet piles around the inside perimeter of the IB to provide protection against side-wall failure associated with equipment operating at the edge of the IB and to limit groundwater infiltration during dewatering/sludge removal activities.

- Install sealed steel sheet pile walls (or an alternative approved by Hercules) within the IB to segregate[1] the IB into eight discrete cells for characterization and effective sludge management. This interior sheet piling (or an approved alternative) will help limit water infiltration and will assist in controlling odors or vapors and the potential for cross media transfer by making the working areas smaller and more manageable. Figure 4 presents the eight discrete cells.[1]
- Collect waste characterization samples from within each of the eight cells as described above. Upon receipt of the data, complete a waste characterization/ determination for sludge in each cell and submit in the Interim Measures Design Report for MDEQ approval.
- Implement contractor bidding and supplemental sludge studies required to ensure the decommissioning is completed safely and will effectively meet the project objectives such as sludge pumpability tests and solidification tests. Note that contractors may have proprietary techniques or alternative approaches to more effectively and efficiently decommission the IB. Therefore, supplemental evaluations by the contractor will be included in the schedule in case they are determined to be necessary.

3.2 Area #1

The recently installed monitoring well network is depicted on Figure 2. Monitoring wells were installed in accordance with the procedures specified in the previously approved Revised Phase I Sampling and Analysis Work Plan (ARCADIS December 2011), the Revised Phase II Sampling and Analysis Work Plan (ARCADIS July 2012), and discussions with the USEPA and MDEQ. The wells will be surveyed for routine gauging of water levels. Additionally, the wells will be sampled quarterly for 1 year. The analyte list will consist of VOCs and semivolatile organic compounds. Upon review of the data and evaluation of the potential receptors, the sampling program might be modified. Any modifications will be submitted to the USEPA and MDEQ for approval.

[1]It is foreseeable that a contractor will propose an alternative to sheet piling for segregating the IB. If so, then the alternative will be evaluated by Hercules and, if approved, provided to the USEPA in a Sheet Pile Design Memorandum and will be included as an element of the Interim Measures Design Report. Also, due to the soft nature of the material, cells may be segregated and solidified or otherwise stabilized in sequence to allow construction equipment to access interior locations of the IB.

Ambient air and crawl space samples will be collected at 135 West 8th Street on a quarterly basis for 1 year (initial sampling was completed in July 2014). The sampling protocols will be in accordance with the previously approved Revised Phase I Sampling and Analysis Work Plan (ARCADIS December 2011) and the Vapor Intrusion Evaluation and Proposed Sampling Plan dated November 27, 2012. The analyte list will be the TO-15 VOCs only. Upon review of the data and evaluation of the potential receptors, the program might be modified. Any modifications will be submitted to the USEPA and MDEQ for approval.

A DNAPL recovery test will be conducted on the newly installed Recovery Well RW-28D. The test will consist of gauging the thickness of DNAPL, removing the DNAPL, recording the volume of DNAPL removed, and monitoring the recharge of DNAPL. Based on these data, an appropriate removal program will be developed.

3.3 Area #2

Temporary wells were installed in Area #2 in accordance with the previously approved Area #2 Work Plan and the June 24, 2014, Follow-Up Area #2 letter. Figure 3 depicts the location of the temporary wells. Upon review of the groundwater data, a permanent monitoring well network and sampling program will be proposed.

4. Conceptual Design Plans and Specifications (Impoundment Basin)

In the second phase of work for the IB, the Interim Measures Design will include results from supplemental evaluations performed by contractors, if any. The design report will be prepared in two main submissions. The first submission of the Interim Measures Design Report will include the 90% design submittal, allowing for comments from the USEPA and MDEQ. Should the USEPA provide comments on the 90% design submittal, then a final design will be prepared to address the comments.

The final detailed elements of the design are yet to be determined because these will be established upon award of the project to the successful bidder; however, experience at the site suggests that the more likely implementation approaches to be included in the Interim Measures Design Report are one or more of the following.

4.1 For Sludge Determined to be Hazardous

- Excavate, pump, or vacuum removal from the IB and haul directly to landfill or off-site hazardous facility in sealed containers (i.e., tankers, geotextile filter tubes, vacuum boxes) for solidification off site prior to disposal.
- Excavate sludge within a structure (equipped with negative pressure and air treatment systems) installed over the hazardous sludge cell(s) or entire IB or by employing alternate vapor and odor suppression and place into a tank for solidification within the structure. Following solidification, load onto trucks, cover, and transport to hazardous landfill.
- Excavate, pump, or vacuum removal from the IB and transport to an on-site existing building (equipped with negative pressure and air treatment systems) and placed into a tank for solidification. Following solidification, load onto trucks, cover, and transport to hazardous landfill.
- Solidify/stabilize in place, with vapor and odor controls as needed, then excavate from the IB and stockpile for later disposal or load directly onto trucks for off-site disposal.

4.2 For Sludge Determined to be Nonhazardous

- Excavate, pump, or vacuum removal from the IB and haul directly to landfill or off-site facility in sealed containers (i.e., tankers, geotextile filter tubes, vacuum boxes) for solidification off site prior to disposal.
- Solidify in-situ (i.e., injection/auger mixing) with aggressive odor/vapor control, excavate solidified sludge, and haul to Pine Belt Regional Landfill (PBRL) in Ovett, Mississippi, for disposal.
- Solidify in-situ or ex-situ within a structure (equipped with negative pressure and air treatment systems) installed over the sludge cell(s) or entire IB. Following solidification, load onto trucks, cover, and transport to PBRL.
- Excavate, pump, or vacuum removal from the IB and transport to an on-site existing building (equipped with negative pressure and treatment systems) and solidify. Following solidification, load onto trucks, cover, and transport to PBRL.

Supplemental evaluations performed by the contractor may result in variations in the general approaches outlined herein, which will be reflected in the Interim Measures Design Report.

5. Construction Implementation Actions (Impoundment Basin)

The third phase of the interim measures for the IB is implementation of the Interim Measures Design through construction in the field. The sequence of construction for the general approach to be designed and implemented is provided below.

- Preparations at the site will be completed to facilitate meeting the final performance criteria. Preparations may include but are not limited to one or more of the following, which will be in operation whenever the sludge is disturbed. The combination of operations will be determined after consultation with selected environmental contractor(s) and will be detailed in the Interim Measures Design Report.
  - Installation of a temporary structure, which will be equipped with a negative pressure system, over the entire IB, each IB cell, or a set of IB cells to manage off-gas generation.
  - Installation of a foaming (or similar) system to effectively cover the sludge to reduce or eliminate off-gassing and odor generation during sludge management.
  - Installation of a misting system to remove odors and vapors that may be emitted from the atmosphere.
  - Upgrade of an existing building on site with a negative pressure system to allow for solidification of the sludge within the building while managing vapor and odors.
  - Installation of a water pumping system within each IB cell or cells prior to removal and/or solidification of the sludge.
  - Installation of a temporary storage and treatment or recirculating system for water that is removed from the IB and potentially the IB sludge containers prior to shipment. The treatment system will likely include filtering and granular activated carbon treatment so that the water can be discharged to the sanitary sewer per the Hercules' Water Pretreatment Permit (MSP091286).
- For each cell where the sludge is determined to be hazardous, the sludge will be removed from the IB, placed in water-tight containers, and dewatered by pumping free water into a tank for subsequent treatment and using the stabilizing reagent to solidify the sludge. Stabilized/solidified sludge will pass the PFLT. The material will be shipped to an appropriate hazardous waste treatment, storage, and

disposal facility. Although unlikely, the solidification may be completed at an approved hazardous waste facility rather than on site.

- For each cell where the sludge is determined to be nonhazardous, the sludge will be (1) removed or solidified in place and then removed and placed in a container or truck for transportation off site; or (2) removed, transported off site, and solidified prior to disposal. The nonhazardous material will be shipped to PBRL for disposal unless off-site stabilization at an alternate landfill is selected for cost efficiency or performance enhancements (PBRL is a Subtitle C landfill that has limited capacity for solidification of such waste).
- Following the removal of sludge from each cell, the wood sidewalls and/or baffles will be removed and stockpiled for proper disposal.
- The cell will be graded or backfilled with the approximate 3,300 cubic yards of clean soil located adjacent to the IB and additional clean soil from an acceptable off-site source as confirmed by analytical data. A layer of gravel may be placed within the bottom of the cell as necessary to overcome wet conditions caused by groundwater infiltration, then the backfill will be placed in 8-inch loose lifts compacted with a dozer and/or excavator. If installed, the gravel layer can be used for management of impacted groundwater. Each lift will be proof-rolled prior to installation of the next lift. After grading to promote drainage, the former IB area will be covered with topsoil, seeded, and mulched to support growth of vegetation.

6. Interim Measures Construction Quality Assurance

Quality assurance measures will be applied in all phases of the IB interim measures. General measures specifically related to interim measures construction are provided below. The contractor will prepare a detailed Quality Assurance Construction Plan based on its specific approach.

For activities conducted in Area #1 and Area #2, the Quality Assurance Project Plan developed for the AO will be utilized. Additionally, modifications to the constituents of potential concern (COPC) that were previously approved for the Area #1 and Area #2 work will be utilized. As specified in Attachment 2 of the 3008(h) Order, the COPC list may be revised after subsequent investigations. Any revisions to the COPC list must be approved by the USEPA, in consultation with MDEQ.

6.1 Project Management Plan

Project management communications will be conducted face-to-face, over the telephone, and in writing (email, technical memorandum) with key stakeholders. For the activities conducted as part of the Area #1 and Area #2 investigations, the Project Management Plan developed for the AO will be utilized. The Project Management Plan for IB work is detailed below.

Pertinent construction activities will be documented daily. These records will include observations of construction activities, test data sheets, identification and reporting of problems encountered during construction, and reports of corrective measures taken to address problems. Pertinent items will be shared among the project team during scheduled tailgate safety meetings, on conference calls, and in reports prepared for this project.

6.1.1 Project Team

The Project Team consists of the people required to perform the roles and responsibilities needed to successfully decommission the IB. Hercules is the Owner of this project. ARCADIS U.S., Inc. (ARCADIS) provides management and engineering support to Hercules. The Contractor (to be determined) will conduct the construction aspects of this project. It should be noted that all Hercules, ARCADIS, and Contractor employees have the authority to and may shut down any project site operation where unsafe work practices exist.

ARCADIS will supply this project with a Project Manager (PM) and an on-site Field Supervisor. The PM is responsible for the overall performance of the Project Team to complete the project. The Field Supervisor is responsible for the administration of the field activities associated with observation and testing services and documenting completion of the construction portions of the project. The Field Supervisor will provide direct updates to the PM and Hercules. The PM or his designee will provide the final documentation and certification of the project upon completion.

The Contractor Project Organization is anticipated to be comprised of the Chief Operating Officer, Director of Health and Safety (H&S Director), Director of Emergency Response, Construction Health and Safety Officer (CHSO), Construction Project Manager (CPM), Construction Site Supervisor (CSS), and designated Technicians.

6.1.2 Construction Project Manager

As stated above, the Contractor will provide the CPM and is ultimately responsible for the administration and implementation of the Work Plan and will respond to the requirements of Hercules that may arise during implementation of the project. The CPM will consult with the CSS regarding all field operations. The ARCADIS PM and Hercules must approve any alteration of the Work Plan. The CPM has overall responsibility for the project startup, safety, productivity, and completion of the project and will maintain clear communications with Hercules and the ARCADIS PM.

6.1.3 Construction Site Supervisor

The CSS is responsible for the daily operations at the site, coordination of the daily activities with the CPM, Hercules, and ARCADIS, and assurance that the technicians perform all operations in a safe manner. The CSS reports directly to the CPM for operational and staffing requirements. Additionally, the CSS reports to the CHSO for safety issues. The CSS has authority to notify the H&S Director for safety issues not addressed by the CHSO.

The CSS reports to the CPM and will:

- Ensure that appropriate material is available, maintained, and properly utilized by all Contractor and Contractor subcontractor personnel;
- Instruct personnel regarding Contractor Safety Policies and their application to potential hazards associated with specific site operations;
- Instruct personnel in safe work practices and procedures for dealing with emergencies;
- Correct work practices or conditions that may result in injury or exposure to toxic substances;
- Supervise and monitor personnel safety performance to ensure required work practices are employed;
- Immediately notify the CHSO of any project-related illness or injury;
- Assist in the development of site-specific CHASP; and
- Coordinate emergency response activities for on-site personnel and with emergency support groups in the community, if necessary.

6.2 Health and Safety

For the activities conducted as part of the Area #1 and Area #2 efforts, the HASP developed for the AO will be utilized. Because of the nature of the IB decommissioning work, a construction health and safety plan (CHASP) will be used. The elements of the CHASP for the IB decommissioning work are outlined below.

Prior to conducting field operations, a hazard analysis will be conducted and included in a written CHASP. The hazard analysis will include, but not be limited to, evaluations of potential traffic control, chemical reagent, excavation, high voltage electricity, underground and overhead utility, and/or high-pressure risks associated with this project. Physical and/or administrative control procedures will be included in the CHASP for each identified hazard.

All project work shall be in accordance with the Occupational Safety and Health Administration (OSHA) 1910.120 Safety Standards. Proof of current OSHA training shall be obtained for all personnel prior to beginning work activities.

6.2.1 Construction Health and Safety Officer

The CHSO is responsible for the safe actions of all Contractor personnel working at the site, along with the safety of the subcontractors and site visitors, and reports directly to the CPM and to Contractor's H&S Director for safety issues not addressed by the CPM. The CHSO administers the health and safety program at the site and will:

- Obtain and interpret instrument readings to determine the degree of hazard present;
- Determine personal protection levels necessary to ensure personnel safety.
- Monitor decontamination procedures;
- Evaluate hazards (environmental, physical, and chemical) and recommend to the CPM modifications to work plans or protection levels necessary to ensure personnel safety;
- Conduct safety and/or training briefings as necessary;
- Ensure that required work practices are utilized by monitoring the safety performance of all personnel;
- Report health and safety violations to the CPM;

- Report project-related injuries and illnesses to the CPM;
- Assist in the coordination of emergency response activities for on-site personnel and with emergency support groups in the community;
- Ensure compliance with applicable health and safety regulatory requirements; and
- If necessary, shut down activities where unsafe work practices exist.

6.2.2 Health and Safety of Site Personnel

All site personnel are required to comply with the Contractor Health and Safety Program and CHASP. Failure to comply will result in disciplinary action. Additional responsibilities include the following:

- Report health and safety violations to the CHSO;
- Be aware of their role in emergency response activities;
- Report project-related injuries and illnesses to CHSO; and,
- Use stop-work authority when personnel identify an unsafe condition or action so proper changes can be implemented.

6.2.3 Daily Health and Safety Tailgate Meetings

Tailgate safety meetings for on-site workers will be conducted daily, at a minimum, prior to the start of activities. The purpose of the safety meetings will be to discuss the activities planned for that day, potential hazards associated with those activities, and procedures that will be implemented to mitigate identified risks. Additional tailgate safety meetings will be held as needed to address changes in conditions not previously discussed.

6.2.4 Work Zone Identification

The CHSO will define and mark the appropriate zones in and around each of the work areas and shall specify equipment, operations, and personnel requirements within these areas. This shall be determined before initiating field activities. The work zones will be clearly delineated on a copy of the site map that is posted at the project site.

6.3 Communications

Weekly conference calls will be held to review the progress of decommissioning activities. At a minimum, the calls should include representatives from Hercules, ARCADIS, Contractor, USEPA, and MDEQ. The calls will address safety, construction progress, changed conditions, community relations, and other pertinent concerns determined by the project team.

7. Operation, Maintenance, and Effectiveness Monitoring

Monitoring will be performed to ensure compliance with the following performance criteria. A detailed odor monitoring plan, which was previously utilized at the site, is provided herein.

7.1 Performance Criteria

The following media performance criteria are proposed for the IB decommissioning activities.

7.1.1 Criteria for Air

Of paramount importance is to protect the public from potentially harmful chemicals. OSHA permissible exposure limit for hydrogen sulfide (H_2S) is 20 parts per million (ppm). The National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL) for H_2S is 10 ppm by volume as a 10-minute ceiling. According to the online NIOSH Pocket Guide to Chemical Hazards, H_2S is a colorless gas with a strong odor of rotten eggs. The sense of smell becomes quickly fatigued to H_2S.

The OSHA time-weighted average (TWA) limit for benzene is 1 ppm, indicating that a site worker shall not be exposed to an airborne concentration of benzene in excess of 1 ppm as an 8-hour TWA. The short-term exposure limit (STEL) for benzene is 5 ppm, indicating that a site worker shall not be exposed to an airborne concentration of benzene in excess of 5 ppm averaged over any 15-minute period. The NIOSH REL as a 10-hour TWA is 0.1 ppm and as a 15-minute STEL is 1 ppm.

In accordance with the State of Mississippi's regulations, the public should be protected from unreasonable odors in ambient air. The following will be used as objective and measurable standards to address odor:

- Benzene concentrations emitted by the IB and collected at the property boundary should not exceed 0.1 ppm.
- Field olfactometer readings collected from odors at the property boundary emitted by and downwind of the IB should not exceed a ratio of 2 dilutions to threshold (D/T). The D/T ratio is a measure of the number of dilutions needed to make the odorous ambient air "non-detectable". The D/T ratio is equal to the volume of carbon-filtered air divided by the volume of odorous air.
- H_2S concentrations emitted by the IB and collected at the property boundary should not exceed 0.02 ppm.

Alternate criteria for air monitoring may be established if agreed upon by Hercules and MDEQ.

7.1.2 Criteria for Solids

The following criteria apply to the sludge removed from the IB. If granular-activated carbon is generated and requires disposal, applicable rules and regulations shall apply.

- All visible sludge is removed from the IB, as evidenced by only native soil remaining at bottom and edges of the sludge excavation.
- All sludge passes PFLT criteria prior to transportation over public roads using conventional means (i.e., roll-off containers or dump trucks).
- All sludge meets PFLT prior to disposal at landfill.
- Hazardous sludge meets LDR requirements, or is disposed of in an environmentally acceptable manner (i.e., incineration).

7.1.3 Criteria for Water

All water generated from dewatering activities shall comply with the loading rates, flow rates, and other criteria set forth in Hercules' Water Pretreatment Permit (MSP091286) prior to discharge to the sanitary sewer.

7.2 Odor Monitoring Plan

Due to the potential for the formation of objectionable odors during the interim measures, a site-specific Odor Monitoring Plan has been provided as follows.

7.2.1 Monitoring Equipment

Monitors will be used both in the work area and areas downwind to protect the public from exposure. H_2S will be monitored immediately downwind of the IB as determined by the on-site weather station using an OdaLog DiCom system (from Detection Instruments Corporation or equivalent).

This system has an H_2S measurement range of 0.005 ppm to 2 ppm. The meter will monitor H_2S on a continuous basis and will be programmed to record a measurement at a frequency of every 10 minutes. Using the system's ability to transmit a 4- to 20-milliampere signal, an alarm will be transmitted to a central monitoring location when a measured concentration exceeds a predetermined level.

H_2S will also be monitored in the work area and areas downwind as needed with a RAEGuard EC (by RAE Systems Inc. or equivalent) equipped with an H_2S sensor. The monitor will be equipped with an alarm which will be initiated if an H_2S concentration of 0.02 ppm or 10 ppm (as appropriate) is reached. In the event that this criterion is exceeded, procedures detailed in the CHASP will be implemented.

Odors will be monitored with a Nasal Ranger® (developed by St. Croix Sensory) consistent with the odor characterization effort.

Because truck traffic will be required during the removal of the dewatered sludge from the site, a dust monitoring instrument will be used to assess dust.

Benzene will be monitored in the work area and downwind areas with an UltraRae 3000 (by RAE Systems) photoionization detector (PID), or equivalent, set in the benzene-specific mode. The UltraRae 3000 meter can detect benzene concentrations between 0.05 ppm and 200 ppm. If a PID reading exceeds the equivalent of 0.1 ppm, an alarm will be initiated and procedures detailed in the CHASP will be implemented.

H_2S is flammable with a lower explosive limit (LEL) of 4 percent. Other compounds such as methane can also be present. Therefore, potentially explosive conditions will be monitored in the work area using an LEL meter. If a reading greater than 10 percent LEL is observed, then sludge removal and dewatering activities will cease until a remedy is determined to address the potentially explosive conditions.

7.2.2 Monitoring Locations, Frequency, and Threshold Concentrations

Monitoring for benzene, odors, and H_2S will be conducted when the sludge is being removed from the IB and/or solidified. One stationary and continuous monitoring location will be installed immediately downwind of the IB for benzene and H_2S. To supplement this, a weather station including an anemometer will be installed to track the direction and speed of the wind. The detection concentration for H_2S in the ambient environment ranges from 0.01 ppm to 0.02 ppm, depending on the environmental conditions and the sensitivity of the individual. An initial alarm level of 0.02 ppm has been selected for H_2S. Because the potential exists for an alarm to occur at this level as a result of motor vehicle operation, rather than concentrations from the sludge, and the proximity of this project to city streets, this alarm level may be adjusted in coordination with MDEQ to avoid false positive alarms. If a detection of H_2S above 0.02 ppm or an alternate MDEQ-approved threshold is detected immediately downwind of the IB, a portable instrument will be used to monitor at the property boundary. An exceedance of 0.02 ppm of H_2S or the MDEQ established threshold at the property boundary due to IB activities will require work to stop. The cause of the exceedances will be investigated and corrective measures implemented to rectify the issue (provided that the investigation indicates that the cause is a result of the sludge and not a false alarm).

In addition, if a detection of benzene above 0.1 ppm, or MDEQ-established threshold, is detected immediately downwind of the IB, a portable instrument will be used to monitor the property boundary. Exceedances of 0.1 ppm at the property boundary due to the IB activities will require work to stop, the cause investigated, and corrective measures implemented to rectify the issue.

Periodic odor quality checks will be completed with the Nasal Ranger® at and around the IB. Two monitoring events will be completed per morning and two monitoring events will be completed per afternoon while work is being conducted on site. More frequent monitoring may result in nasal fatigue and will not accurately represent odor quantification.

The selected contractor will be required to install one stationary and continuous monitoring location immediately downwind of the highest area of truck traffic for dust. The selected contractor will also be required to continuously monitor benzene, LEL, and H_2S in any worker areas for worker safety.

The monitoring will only be conducted during sludge removal and solidification because there should not be elevated emissions when the sludge is in a quiescent condition.

The following table summarizes the monitoring parameters, threshold concentration, location, measuring device, and frequency. The threshold is the concentration at which an action will be required as specified by the CHASP and/or Odor Mitigation Plan developed by the Contractor.

Compound/ Parameter	Threshold Concentration*	Monitoring Locations	Monitoring Device	Monitoring Frequency
Benzene	0.1 ppm	Worker Area	UltraRae 3000 benzene specific PID or EQ	Continuous
		Downwind of IB		Continuous
		Property Boundary		As Needed (see above)
Hydrogen Sulfide	10 ppm	Worker Area	RAE MesGuard or EQ	Continuous
	0.02 ppm	Downwind of IB	OdaLog DiCom or Jerome 631X or EQ	Continuous
	0.02 ppm	Property Boundary	RAEGuard EC or EQ	As Needed (see above)
Odor	2 D/T	Property Boundary and IB area	Nasal Ranger®	2 morning, 2 afternoon
Explosive Conditions	10% LEL	Worker Area	TBD	Continuous
Dust	>100 mg/m^3 above background	Highest Traffic Area	TBD	As needed during sludge hauling activities

* Or alternate criteria approved by MDEQ.

D/T Dilution to threshold.
EQ Equivalent.
LEL Lower explosive limit.
mg/m^3 milligrams per cubic meter.
PID Photoionization detector.
ppm Parts per million.
TBD To be determined.

7.3 Demonstration

Initial site work will involve the preparation for and execution of a demonstration of solidification of IB sludge within a cell. Once the demonstration is successful, full removal of sludge from the remaining cells will continue.

At the beginning of operations, a demonstration of the procedures to be employed will be conducted for the USEPA and MDEQ. The following items will be monitored during the demonstration:

- Health and safety protocols;
- Air monitoring data;
- Physical odor;
- Odor control system at IB; and
- Stability and effectiveness of approach.

Upon confirmation that the approach is effective at addressing the above items, operations will continue. If a deficiency is identified, the deficiency will be addressed prior to continuing operations. During operation, Hercules will monitor and document performance of the solidification effort and provide the USEPA and MDEQ updates of the progress and findings.

7.4 Confirmatory Floor Sampling

In conjunction with the removal of the sludge from the IB, approximately 6 inches of soil at the bottom of the IB will be excavated. Once the soil has been removed from the IB, one confirmatory sample from each cell of the IB will be collected (total of eight). The floor confirmatory samples will be submitted to a National Environmental Laboratory Accreditation Program accredited analytical laboratory and analyzed for VOCs by USEPA Method 8260B. The sample results will be compared to MDEQ Tier 1 Target Remediation Goals. Native material within the saturated groundwater zone deeper than the 6 inches will not be removed. Any IB-related constituents of concern remaining on site after IB decommissioning will be managed as part of the groundwater remedy under the MDEQ Restricted Use Agreed Administrative Order (dated May 9, 2011) or another appropriate regulatory mechanism.

7.5 Contingency Plans

7.5.1 Odor Control

In the event of objectionable odors at the facility boundary, the controls will be evaluated and modified as needed. Work will be temporarily stopped if necessary to allow abatement of the odor. Work will resume after the odor has been abated. Specific contingency measures for odor control will be identified in the Interim Measures Design Report.

7.5.2 Inclement Weather

Upon receipt of notice of an immediate threat of inclement weather (defined as a National Weather Service warning or watch of a hurricane, tornado, and/or rainfall of greater than 3 inches in a 24-hour period for Forrest County) occurring, the following actions will be completed as determined necessary by Hercules. These items will be considered Phase I of this procedure.

- All personnel will start preparing for the hurricane season by performing a pre-inspection of their job site monthly from May through December. This inspection should identify where equipment will be stored, equipment/material that needs to be tied down, and who will perform each task identified.
- All storage tanks will be checked to ensure that they are tied down and filled to prevent their floating away in high water conditions.
- Tarpaulins covering material, which may be damaged by the water or wind, will be securely lashed down (securing the corners only will not suffice.)
- Material and equipment that needs to be moved into a protective structure will be identified. Arrangements will be made to secure this storage area for the equipment. This will be re-evaluated at the beginning of each inclement weather season.
- As project requirements change and new items such as gang boxes or temporary construction structures are placed on site, ensure they are securely tied down.
- Throughout the inclement weather season, identify material that will need to be tied down and assign someone to accomplish this task on a routine basis.
- Ensure all drainage systems are thoroughly inspected and cleaned in preparation for heavy rainfalls.

- Inspect all trailers, temporary buildings, fractionation tanks, and other items located outdoors to ensure that they can be adequately secured. Ensure that all windows are closed and locked and that all doors can be securely closed and locked.

The CHSO will ensure all weather conditions with the potential to form tornadoes, tropical depressions, tropical storms, and hurricanes in the Gulf of Mexico are tracked and the information posted and updated. Forecast positions and pertinent storm information will be plotted on maps located at the on-site office.

The CSS, CPM, and other designated representatives in coordination with Hercules will make the decision to continue or suspend work when a storm is a potential threat (e.g., when tornado forming conditions are forecast, when a tropical storm or hurricane is forecast to affect the local area). The decision to stop work and evacuate will be made by the CHSO. In the event the decision is made to implement inclement weather procedures, the following will occur. This will be considered Phase II of this procedure:

- After the CHSO notifies site personnel that an evacuation is imminent, Phase II will be implemented. The CHSO will notify the field supervisors who will, in turn, notify their personnel to execute Phase II of this plan.
- All ongoing construction shall cease and preparation will begin to respond to the storm.
- All gang boxes and temporary construction structures not securely hooked to a foundation will also be tied down. Material such as plywood, etc., will also be lashed down.
- All material and equipment that can be moved into a protective structure will be moved inside.
- All equipment such as excavators, trucks, manlifts, etc., will be moved to an area where they are least likely to be reached by high water. Equipment will be moved off site if it is determined to be more protective.
- All equipment will be stored with booms lowered and outriggers out. All equipment will be parked parallel, close together, with brakes set and wheels chocked. This method has been proven most effective in minimizing possible damage. This will only be executed if evacuation is not feasible.
- All power should be turned off at the office location. The generator should be turned off completely.

- Non-essential personnel need to evacuate as soon as the order is given by the CHSO.
- When the evacuation order is received, all personnel shall leave the job site and not return to the job site unless notification is received from the CHSO that it is all clear and it is safe to do so.

After an inclement weather incident evacuation and the "All Clear" has been given by local authorities, the following will occur:

- The CHSO will inform the CPM that it is appropriate to initiate the recovery phase;
- A team consisting of the CHSO, CPM, CSS, and/or a Hercules representative will evaluate on-site conditions. This team will make an initial assessment of conditions and make a recommendation to the Site Manager on which personnel to recall to assist in clean-up efforts; and
- The team will coordinate all actions through Hercules to ensure the site is safe to enter and to ensure proper coordination with local authorities.

8. Reporting

8.1 Impoundment Basin

A Sheet Pile Design Memorandum for the design of the sheet pile and an Interim Measures Design Report for the sludge removal, dewatering, and disposal will be submitted to the USEPA and MDEQ prior to initiating decommissioning activities.

Weekly reports will be submitted to MDEQ documenting decommissioning activities completed during the previous week. The reports will include a summary of the work completed to date and a review of work planned for the upcoming week.

Following the completion of the work, an Interim Measures Completion Report will be submitted for the decommissioning of the IB to include a description of the work completed, laboratory analytical tables, photo documentation of the work, and all associated waste manifests.

8.2 Area #1 and Area #2

Data collected from the initial phase of work for both Area #1 and Area #2 will be included in the Revised Phase I and II Investigation Report. Any data generated after

July 2014 will be included in supplemental reports. In the event further interim measures are required for either Area, an Interim Measures Design Report will be submitted.

9. Schedule

The following presents the anticipated schedule for implementation of the IB decommissioning activities.

IMWP Submittal	August 22, 2014 (within 45 days of effective date of 3008(h) Order)
Preliminary Studies (i.e., geotechnical) of IMWP	4 to 8 weeks following USEPA approval
Submittal of Sheet Pile Design Memorandum	2 weeks following completion of study
Sheet Pile Installation	To be determined, contractor dependent
Pre-Characterization Sampling	Within 4 to 6 weeks following sheet pile installation
Contractor Sludge Studies	4- to 8-week duration following Pre-Characterization Sampling
Submittal of 90% Interim Measures Design Report	12 weeks following Pre-Characterization Sampling
Submittal of final design report	2 weeks following MDEQ/USEPA acceptance of 90% design report
Mobilization Sludge Management Equipment	To be determined, contractor dependent
Project Completion	To be determined, contractor dependent
Final Report	60 days following project completion

The following presents the anticipated schedule for implementation of the Area #1 activities.

IMWP Submittal	August 22, 2014 (within 45 days of effective date of 3008(h) Order)
Installation of Permanent Monitoring Well Network	Completed in July 2014
Groundwater Sampling	First quarterly event completed in July 2014
Installation of Recovery Well	Completed in July 2014
Air Sampling	First quarterly event completed in July 2014

DNAPL Evaluation	Third Quarter 2014
Evaluation of Dissolved-Phase Groundwater Plume (Revised Phase I and II Report)	September 30, 2014

The following presents the anticipated schedule for implementation of the Area #2 activities.

IMWP Submittal	August 22, 2014 (within 45 days of effective date of 3008(h) Order)
Delineation of Dissolved-Phase Groundwater Plume	Completed in July 2014
UST Removal and Scale Evaluation	Completed in 2014
Evaluation of Dissolved-Phase Groundwater Plume (Revised Phase I and II Report)	September 30, 2014
Installation of Permanent Monitoring Well Network	Fourth Quarter

9. Community Engagement

Hercules will continue to work with the USEPA and MDEQ to keep the community informed of the activities being conducted at the Site. To date, community engagement has included attending public meetings and assisting the USEPA and MDEQ with preparation of Fact Sheets and Press Releases.

For the IB decommissioning work, prior to full-scale implementation of the actual sludge solidification and removal efforts, a demonstration will be completed for MDEQ and the USEPA. Information from the demonstration will be provided to MDEQ/USEPA to be made available to the public either through a mailing or a community meeting whichever is deemed appropriate by MDEQ/USEPA. This IMWP, the Interim Measures Design reports, and the final report documenting decommissioning activities will be included in the public repository for the project.

It is expected that MDEQ will address odor complaints as was the case in the sludge removal efforts using the filter press. Any odor complaints received by MDEQ during operations in the work area will be evaluated by Hercules in conjunction with MDEQ. The time and location of the complaint will be logged and evaluated against on-site analytical air monitoring data and the project activities being conducted at the time of the complaint. If the complaint is found to be valid, the odor control strategies being

employed at the time of the complaint will be evaluated and modified as needed and work will be temporarily stopped if necessary to allow abatement of the odor. Work will resume after the odor has abated.

Should an emergency situation arise that could create a potentially dangerous situation for the public, MDEQ and applicable state and local agencies will immediately be notified. Measures will be taken to address the emergency situation in conjunction with those authorities.

10. Cost Estimate/Financial Assurance

This section is reserved pending USEPA/MDEQ review of conceptual approach, Pending review, a cost estimate and attendant financial assurance will be prepared and submitted to the USEPA/MDEQ.

11. References

ARCADIS. 2010a. *Sludge Characterization and Bench Scale Treatability Report.* August 20.

ARCADIS. 2010b. *Sludge Characterization and Bench Scale Treatability Work Plan.* March 1.

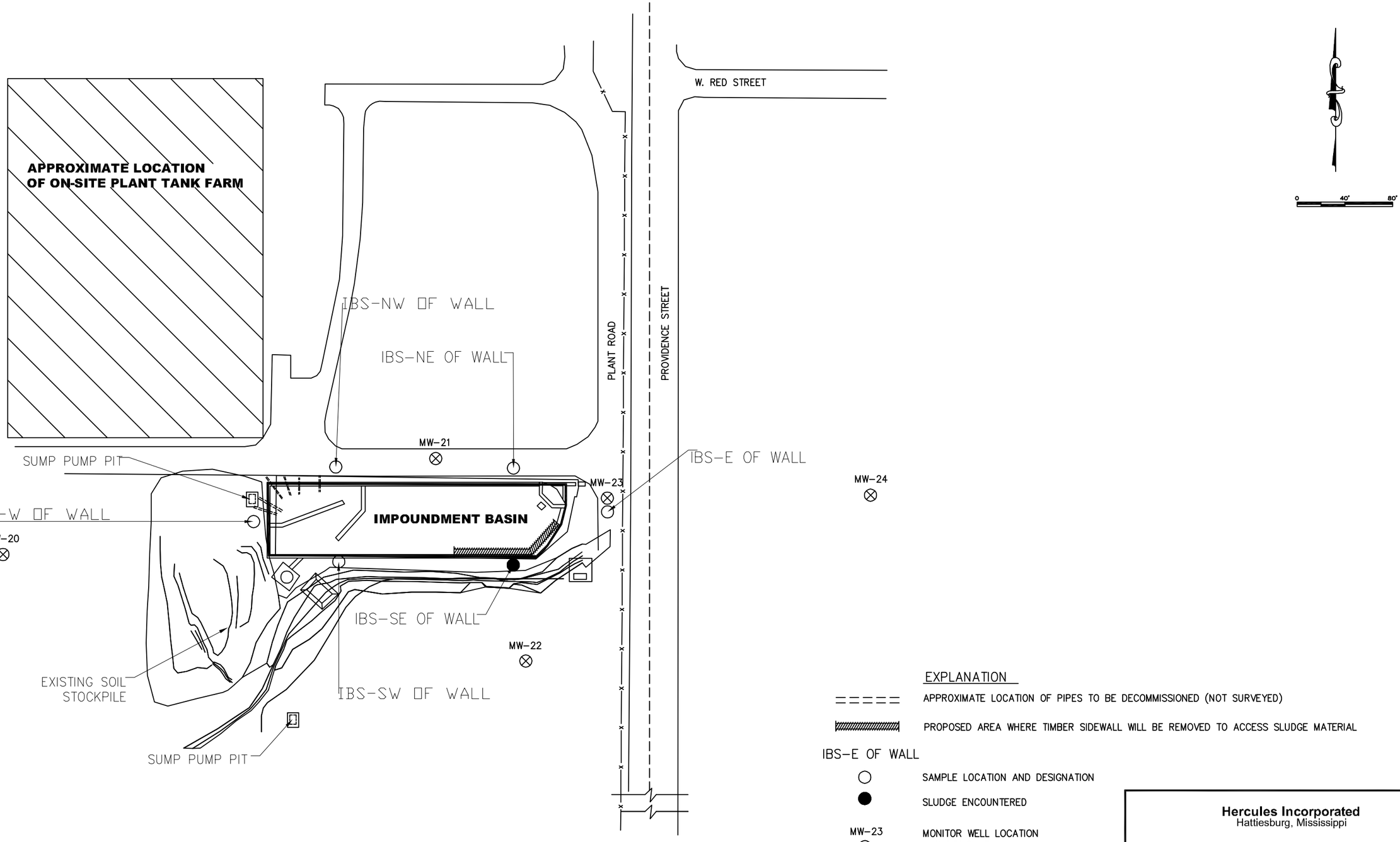
ARCADIS. 2011a. *Revised Phase I Sampling and Analysis Work Plan.* December 16.

ARCADIS. 2012a. *Sampling Outside of Impoundment Basin Walls.* November 21.

ARCADIS. 2012b. *Revised Phase II Sampling and Analysis Work Plan.* July 20.

ARCADIS

Figures

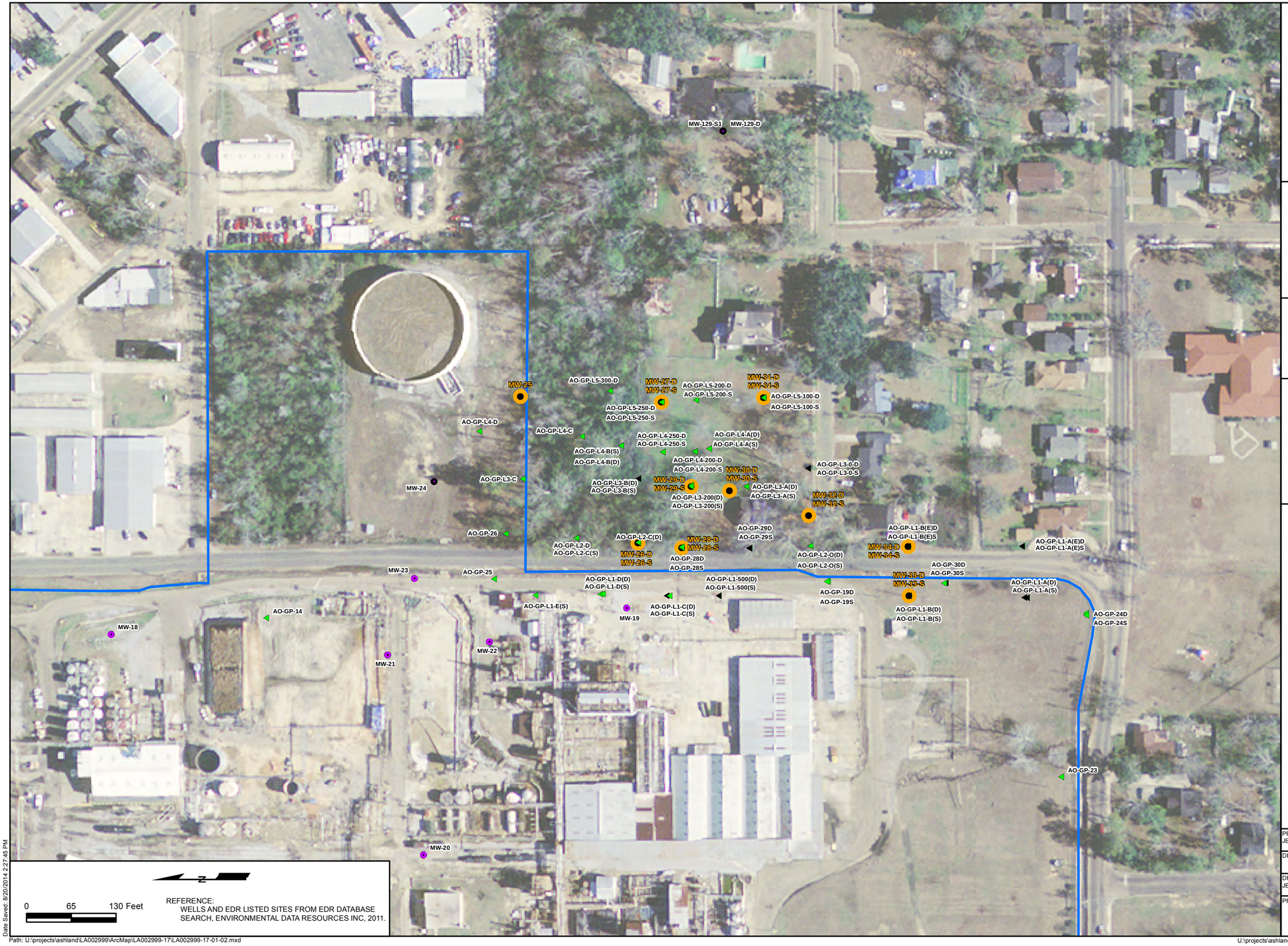


Hercules Incorporated
Hattiesburg, Mississippi

IB SIDEWALL SAMPLE LOCATIONS

ARCADIS

FIGURE
1



AREA #1 MONITORING WELL NETWORK

HERCULES INCORPORATED
613 W. 7th Street
Hattiesburg, Mississippi

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

Legend

- Temporary Well (Shallow Aquifer)
- Monitor Well (Shallow Aquifer)
- Monitoring Wells installed July 2014
- Approxmate Property

PROJECT MANAGER: JE	CHECKED BY: CD
DRAWING FILE:	GIS FILE:
DRAWING BY: JEC	DATE: 08/20/2014
PROJECT NUMBER: LA002999.0017	FIGURE NUMBER: 2

Date Saved: 8/20/2014 2:27:45 PM

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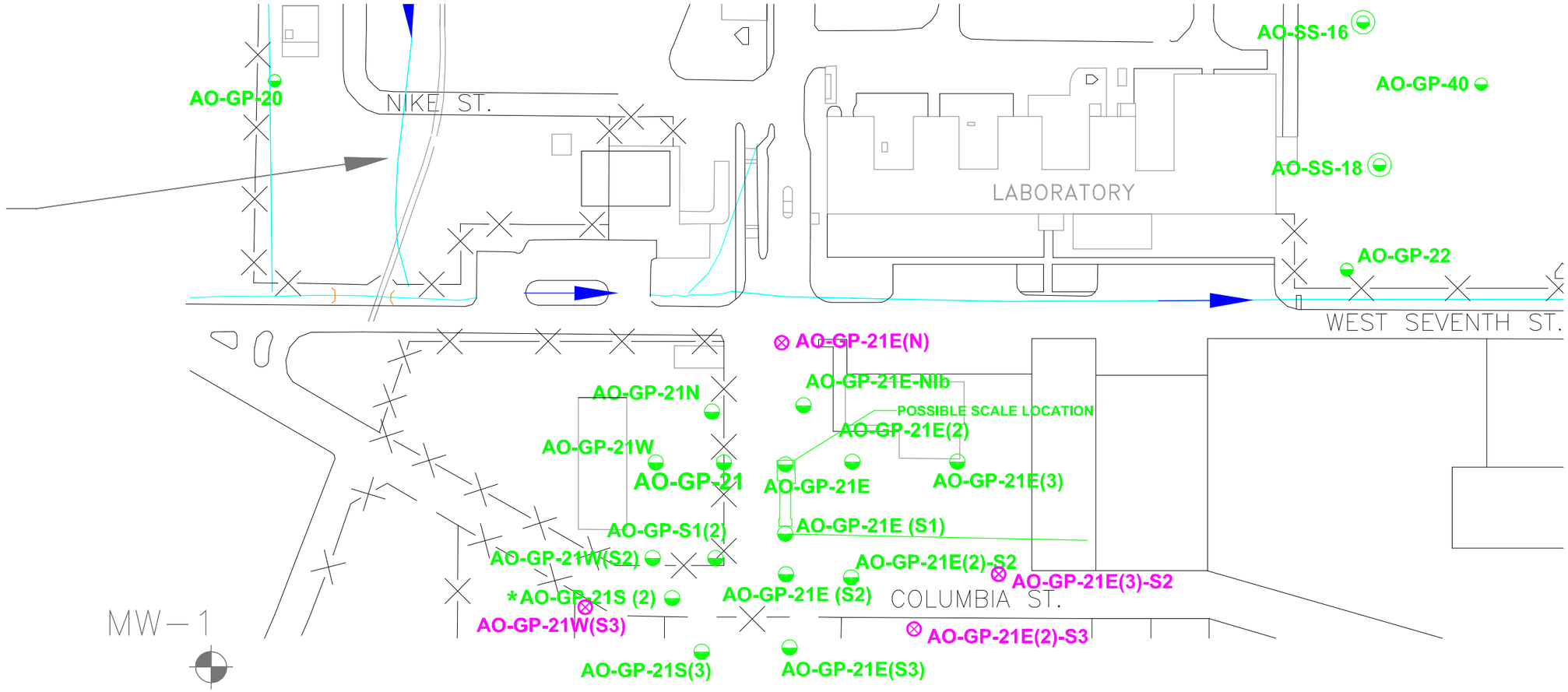

LEGEND

AO-GP-01	USEPA 3013(a) DIRECT PUSH SOIL/GROUNDWATER SAMPLE LOCATION
MW-4	GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION,
TP-12	PIEZOMETER LOCATION AND IDENTIFICATION
	WATER FLOW DIRECTION
CM-1	CREEK MEDIA SAMPLING POINT LOCATION AND IDENTIFICATION
	APPROXIMATE PROPERTY BOUNDARY
	INTERMITTENT DRAINAGE DITCH
	APPROXIMATE BOUNDARY OF FORMER LANDFILL AREA
*	LOCATION NOT SURVEYED
AO-GP-21N	JULY 2014 SAMPLE LOCATION AND DESIGNATION (SURVEY DATA PENDING)

NOTE:
AO-GP-S1(2) IS NOT A SURVEYED LOCATION.
THE LOCATION IS APPROXIMATE.
VALUES WITH BLANK CONTAMINATION ("B" QUALIFIER)
ARE NOT SHOWN ON FIGURE.
NS – NOT SAMPLED
NO EXCEEDANCES – INDICATES NO DETECTIONS REPORTED ABOVE USEPA
REGIONAL SCREENING LEVELS OR MDEQ TIER 1 TARGET REMEDIATION GOALS.

0 50' 100'

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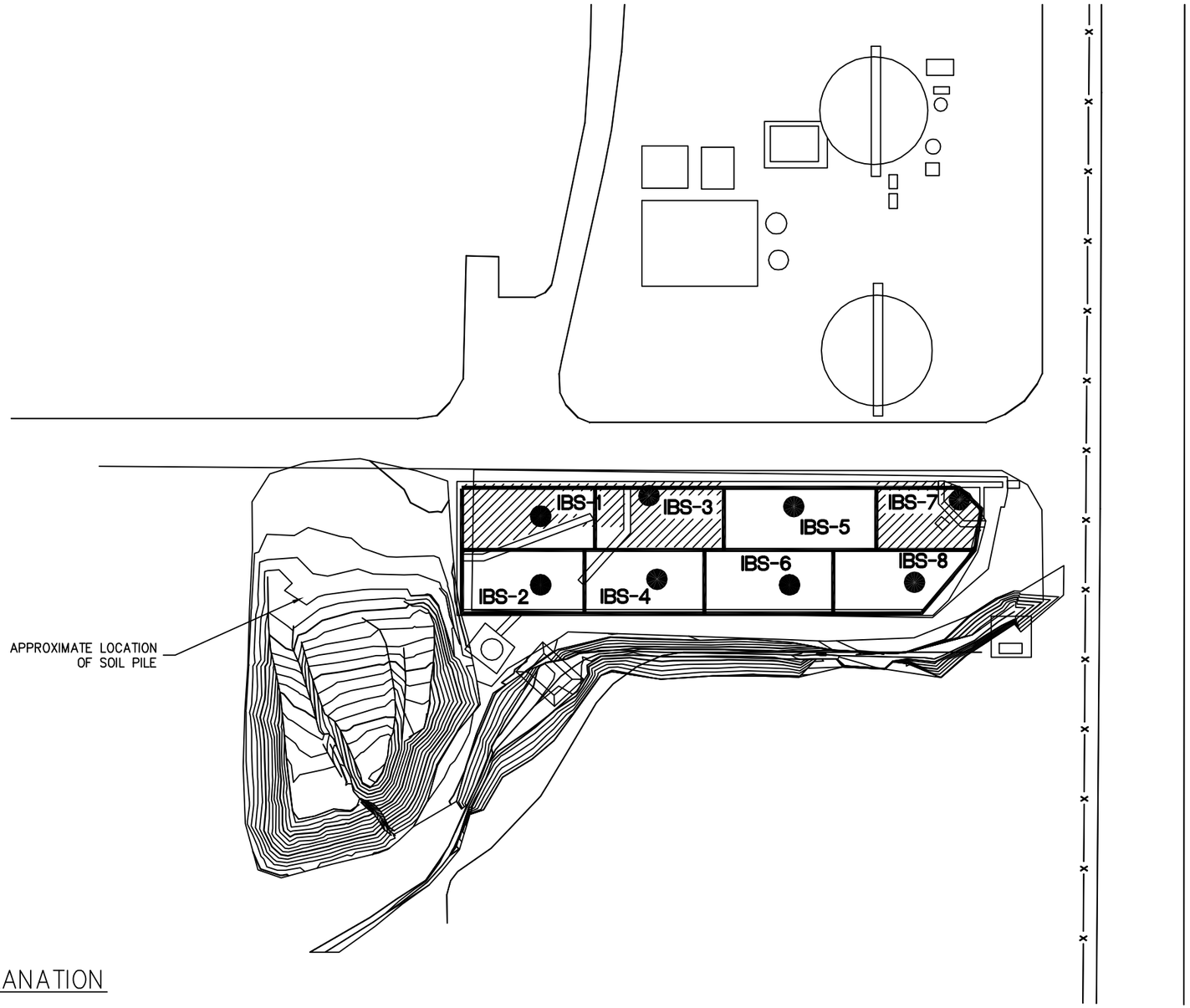
Hattiesburg, Mississippi

AREA #2 SAMPLE LOCATIONS

ARCADIS

FIGURE
3



EXPLANATION

IBS-1 PREVIOUS CHARACTERIZATION/TREATABILITY SAMPLE LOCATION

SLUDGE MATERIAL WITH PREVIOUS EXCEEDANCE OF THE TCLP–BENZENE TOXICITY CHARACTERISTIC STANDARD.

0 30' 60'

Hercules Incorporated
Hattiesburg, Mississippi

IB CONFIGURATION

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FIGURE
4

DB:(S. MEN) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*OFF=*REF*
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